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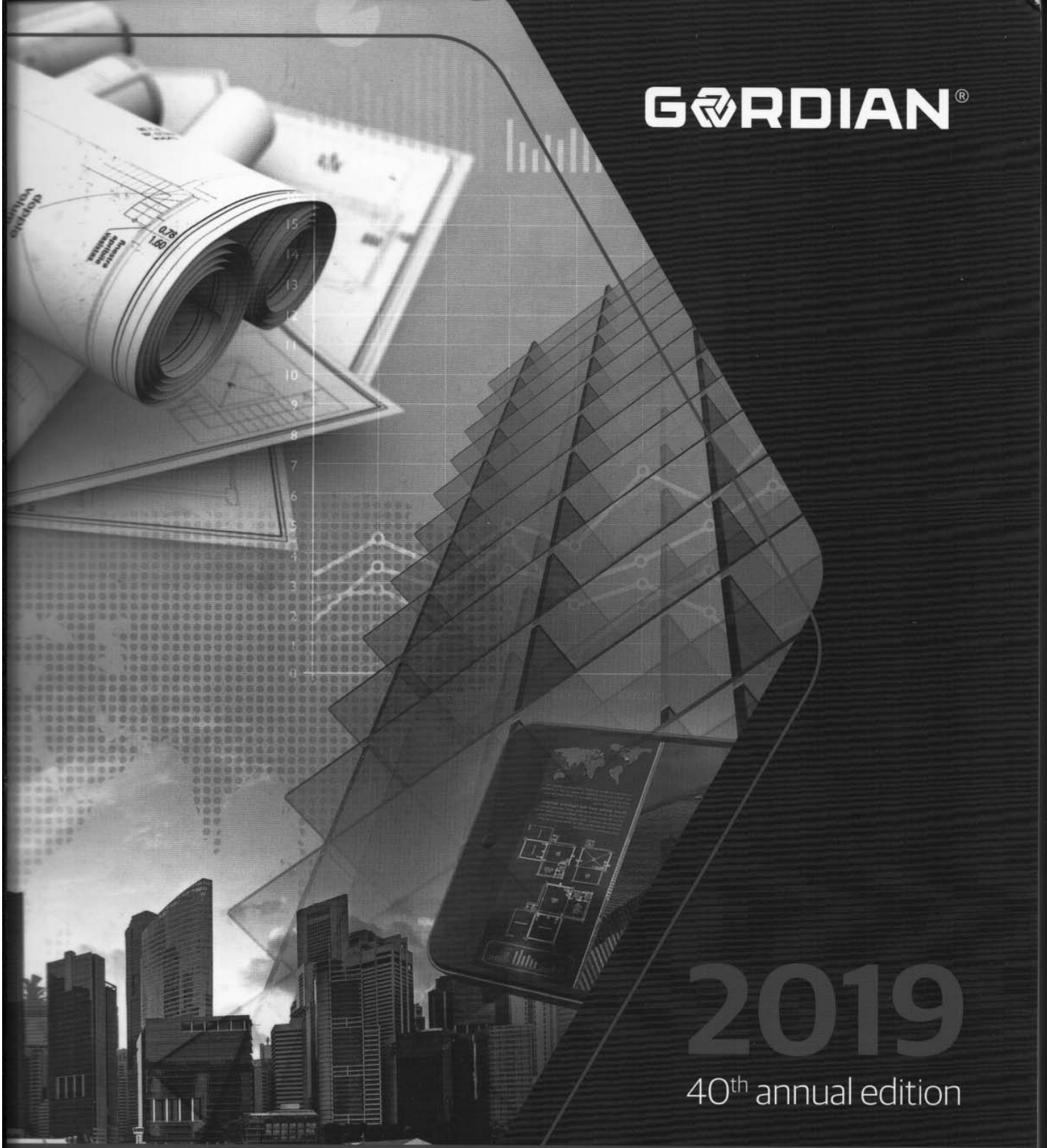

2019

40th annual edition

Square Foot Costs
with RSMeans data

Commercial/Industrial/ Institutional Models

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Introduction to the Commercial/ Industrial/Institutional Section

General

The Commercial/Industrial/Institutional section contains base building costs per square foot of floor area for 77 model buildings. Each model has a table of square foot costs for combinations of exterior wall and framing systems. This table is supplemented by a list of common additives and their unit costs. In printed versions, a breakdown of all component costs used to develop the base cost for the model is included. In electronic products, the cost breakdown is available as a printable report. Modifications to the standard models can be performed manually in printed products and automatically using the "swapper" feature in electronic products.

This data may be used directly to estimate the construction cost of most types of buildings when only the floor area, exterior wall construction, and framing systems are known. To adjust the base cost for components that are different than the model, use the tables from the Assemblies Section.

Building Identification & Model Selection

The building models in this section represent structures by use. Occupancy, however, does not necessarily identify the building, i.e., a restaurant could be a converted warehouse. In all instances, the building should be described and identified by its own physical characteristics. The model selection should also be guided by comparing specifications with the model. In the case of converted use, data from one model may be used to supplement data from another.

Green Models

Consistent with expanding green trends in the design and construction industry, 25 green building models are currently included. Although similar to our standard models in building type and structural system, the green models align with Energy Star requirements and address many of the items necessary to obtain LEED certification. Although our models do not include site-specific information, our design assumption is that they are located in climate zone 5. DOE's eQuest software was used to perform an energy analysis of the model buildings. By reducing energy use, we were able to reduce the size of the service entrances, switchgear, power feeds, and generators. Each of the following building systems was researched and analyzed: building envelope, HVAC, plumbing fixtures, lighting, and electrical service. These systems were targeted because of their impact on energy usage and green building.

Wall and roof insulation was increased to reduce heat loss and a recycled vapor barrier was added to the foundation. White roofs were specified for models with flat roofs. Interior finishes include materials with recycled content and low VOC paint. Stainless steel toilet partitions were selected because the recycled material is easy to maintain. Plumbing fixtures were selected to conserve water. Water closets are low-flow and equipped with auto-sensor valves. Waterless urinals are specified throughout. Faucets use auto-sensor flush valves and are powered by a hydroelectric power unit inside the faucet. Energy-efficient, low-flow water coolers were specified to reduce energy consumption and water usage throughout each building model.

Lighting efficiency was achieved by specifying LED fixtures in place of standard fluorescents. Daylight on/off lighting control systems were incorporated into the models. These controls are equipped with sensors that automatically turn off the lights when sufficient daylight is available. Energy monitoring systems were also included in all green models.

Adjustments

The base cost tables represent the base cost per square foot of floor area for buildings without a basement and without unusual special features. Basement costs and other common additives are available. Cost adjustments can also be made to the model by using the tables from the Assemblies Section.

Dimensions

All base cost tables are developed so that measurements can be readily made during the inspection process. Areas are calculated from exterior dimensions and story heights are measured from the top surface of one floor to the top surface of the floor above. Roof areas are measured by horizontal area covered and costs related to inclines are converted with appropriate factors. The precision of measurement is a matter of the user's choice and discretion. For ease in calculation, consideration should be given to measuring in tenths of a foot, i.e., 9 ft. 6 in. = 9.5 ft. and 9 ft. 4 in. = 9.3 ft.

Floor Area

The term "Floor Area" as used in this section includes the sum of floor plate at grade level and above. This dimension is measured from the outside face of the foundation wall. Basement costs are calculated separately. The user must exercise his/her own judgment, where the lowest level floor is slightly below grade, whether to consider it at grade level or make the basement adjustment.

How to Use the Commercial/ Industrial/Institutional Section

The following is a detailed explanation of a sample entry in the Commercial/Industrial/Institutional Square Foot Cost Section. Each bold number below corresponds to the described item on the following page with the appropriate component or cost of the sample entry following in parentheses.

Prices listed are costs that include overhead and profit of the installing contractor and additional markups for General Conditions and Architects' Fees.

COMMERCIAL/INDUSTRIAL/INSTITUTIONAL | **M.010** (1) | **Apartment, 1-3 Story** (2)

Costs per square foot of floor area

Exterior Wall (3)	S.F. Area	8000	12000	15000	19000	22500	25000 (4)	29000	32000	36000
	L.F. Perimeter	213	280	330	350	400	433	442	480	520
Fiber Cement	Wood Frame	190.00	181.90	178.70	172.85	171.25	170.25	167.10	166.50	165.45
Stone Veneer	Wood Frame	210.50	199.95	195.65	187.05	184.90 (5)	183.60	178.85	178.05	176.60
Brick Veneer	Rigid Steel	201.20	191.50	187.55	179.85	177.95	176.75	172.50	171.75	170.45
E.I.F.S. and Metal Studs	Rigid Steel	195.20	186.55	183.00	176.55	174.80	173.80	170.20	169.55	168.45
Brick Veneer	Reinforced Concrete	224.25	212.70	207.95	198.30	196.00	194.60	189.20	188.30	186.65
Stucco and Concrete Block	Reinforced Concrete	211.70	201.60	197.55	189.60	187.65	186.40	182.00	181.20	179.85
Perimeter Adj., Add or Deduct (6)	Per 100 L.F.	15.95	10.65	8.40	6.65	5.65	5.10 (7)	4.40	3.95	3.55
Story Hgt. Adj., Add or Deduct	Per 1 Ft.	2.50	2.25	2.05	1.75	1.65	1.70	1.40	1.40	1.30

(8) ***For Basement**, add $ 39.20 per square foot of basement area*

The above costs were calculated using the basic specifications shown on the facing page. These costs should be adjusted where necessary for design alternatives and owner's requirements.

Common additives (9)

Description	Unit	$ Cost
Appliances		
Cooking range, 30" free standing		
1 oven	Ea.	620 - 2825
2 oven	Ea.	1225 - 3825
30" built-in		
1 oven	Ea.	1075 - 2550
2 oven	Ea.	1675 - 3175
Counter top cook tops, 4 burner	Ea.	475 - 2300
Microwave oven	Ea.	285 - 860
Combination range, refrig. & sink, 30" wide	Ea.	2275 - 2750
72" wide	Ea.	3225
Combination range, refrigerator, sink, microwave oven & icemaker	Ea.	7250
Compactor, residential, 4-1 compaction	Ea.	905 - 1475
Dishwasher, built-in, 2 cycles	Ea.	705 - 1225
4 cycles	Ea.	835 - 2825
Garbage disposer, sink type	Ea.	266 - 375
Hood for range, 2 speed, vented, 30" wide	Ea.	375 - 1500
42" wide	Ea.	440 - 2625
Refrigerator, no frost 10-12 C.F.	Ea.	595 - 765
18-20 C.F.	Ea.	915 - 2100

Description	Unit	$ Cost
Closed Circuit Surveillance, One station	Ea.	1350
Camera and monitor	Ea.	610
For additional camera stations, add		
Elevators, Hydraulic passenger, 2 stops	Ea.	73,500
2000# capacity	Ea.	76,000
2500# capacity	Ea.	81,000
3500# capacity	Ea.	8500
Additional stop, add		
Emergency Lighting, 25 watt, battery operated	Ea.	335
Lead battery	Ea.	555
Nickel cadmium		
Laundry Equipment	Ea.	1050
Dryer, gas, 16 lb. capacity	Ea.	4050
30 lb. capacity	Ea.	1325
Washer, 4 cycle	Ea.	1700
Commercial		
Smoke Detectors	Ea.	251
Ceiling type	Ea.	550
Duct type		

1 Model Number (M.010)

"M" distinguishes this section of the data and stands for model. The number designation is a sequential number. Our newest models are green and are designated with the letter "G" followed by the building type number.

2 Type of Building (Apartment, 1-3 Story)

There are 50 different types of commercial/industrial/institutional buildings highlighted in this section.

3 Exterior Wall Construction and Building Framing Options (Stone Veneer with Wood Frame)

Three or more commonly used exterior walls and, in most cases, two typical building framing systems are presented for each type of building. The model selected should be based on the actual characteristics of the building being estimated.

4 Total Square Foot of Floor Area and Perimeter Used to Compute Base Costs (22,500 Square Feet and 400 Linear Feet)

Square foot of floor area is the total gross area of all floors at grade and above and does not include a basement. The perimeter in linear feet used for the base cost is generally for a rectangular, economical building shape.

5 Cost per Square Foot of Floor Area ($184.90)

The highlighted cost is for a building of the selected exterior wall and framing system and floor area. Costs for buildings with floor areas other than those calculated may be interpolated between the costs shown.

6 Building Perimeter and Story Height Adjustments

Square foot costs for a building with a perimeter or floor-to-floor story height significantly different from the model used to calculate the base cost may be adjusted (add or deduct) to reflect the actual building geometry.

7 Cost per Square Foot of Floor Area for the Perimeter and/or Height Adjustment ($5.65 for Perimeter Difference and $1.65 for Story Height Difference)

Add (or deduct) $5.65 to the base square foot cost for each 100 feet of perimeter difference between the model and the actual building. Add (or deduct) $1.65 to the base square foot cost for each 1 foot of story height difference between the model and the actual building.

8 Optional Cost per Square Foot of Basement Floor Area ($39.20)

The cost of an unfinished basement for the building being estimated is $39.20 times the gross floor area of the basement.

9 Common Additives

Common components and/or systems used in this type of building are listed. These costs should be added to the total building cost. Additional selections may be found in the Assemblies Section.

How to Use the Commercial/ Industrial/Institutional Section (Cont.)

The following is a detailed explanation of the specification and costs for a model building in the Commercial/Industrial/Institutional Square Foot Cost Section. Each bold number below corresponds to the described item on the following page with the appropriate component of the sample entry following in parentheses.

Prices listed in the specification are costs that include overhead and profit of the installing contractor but not the general contractor's markup and architect's fees.

Model costs calculated for a 3 story building with 10′ story height and 22,500 square feet of floor area (1)

(2) Apartment, 1-3 Story

				Unit	Unit Cost	Cost Per S.F.	% Of Sub-Total
A. SUBSTRUCTURE							
1010	Standard Foundations	Poured concrete; strip and spread footings; 4′ foundation wall		S.F. Ground	10.53	3.51	
1020	Special Foundations	N/A		–	–	–	
1030	Slab on Grade	4" reinforced concrete		S.F. Slab	5.87	1.96	4.0%
2010	Basement Excavation	Site preparation for slab and trench for foundation wall and footing		S.F. Ground	.33	.11	
2020	Basement Walls	N/A		–	–	–	
B. SHELL							
	B10 Superstructure						
1010	Floor Construction	Wood Beam and joist on wood columns, fireproofed		S.F. Floor	21.39	14.26	12.2%
1020	Roof Construction	Wood roof, truss, 4/12 slope		S.F. Roof	7.83	2.61	
	B20 Exterior Enclosure						
2010	Exterior Walls	Ashlar stone veneer on wood stud back up, insulated	*80% of wall*	S.F. Wall	41.67	17.78	
2020	Exterior Windows	Aluminum horizontal sliding	*20% of wall*	Each	529	3.76	16.0%
2030	Exterior Doors	Steel door , hollow metal with frame		Each	3170	.57	
	B30 Roofing						
3010	Roof Coverings	Asphalt roofing, strip shingles, flashing		S.F. Roof	2.19	.73	0.5%
3020	Roof Openings	N/A		–	–	–	
C. INTERIORS							
1010	Partitions (3)	Gypsum board on wood studs (4)	*10 S.F. Floor/L.F. Partition*	S.F. Partition	7.83	6.96	
1020	Interior Doors	Interior single leaf doors, frames and hardware	*130 S.F. Floor/Door* (6)	Each (7)	1398 (8)	10.60	
1030	Fittings	Residential wall and base wood cabinets, laminate counters		S.F. Floor	4.94	4.94	
2010	Stair Construction	Wood Stairs with wood rails (5)		Flight	2920	.78	25.9% (9)
3010	Wall Finishes	95% paint, 5% ceramic wall tile		S.F. Surface	1.47	2.62	
3020	Floor Finishes	80% Carpet tile, 10% vinyl composition tile, 10% ceramic tile		S.F. Floor	5.32	5.32	
3030	Ceiling Finishes	Painted gypsum board ceiling on resilient channels		S.F. Ceiling	4.59	4.59	
D. SERVICES							
	D10 Conveying						
1010	Elevators & Lifts	Hydraulic passenger elevator		Each	117,675	5.23	3.8%
1020	Escalators & Moving Walks	N/A		–	–	–	
	D20 Plumbing						
2010	Plumbing Fixtures	Kitchen, bath, laundry and service fixtures, supply and drainage	*1 Fixture/285 S.F. Floor*	Each	2052	7.20	
2020	Domestic Water Distribution	Electric water heater		S.F. Floor	8.64	8.64	11.8%
2040	Rain Water Drainage	Roof drains		S.F. Roof	1.62	.54	
	D30 HVAC						
3010	Energy Supply	Oil fired hot water, baseboard radiation		S.F. Floor	8.66	8.66	
3020	Heat Generating Systems	N/A		–	–	–	
3030	Cooling Generating Systems	Chilled water, air cooled condenser system		S.F. Floor	9.06	9.06	12.8%
3050	Terminal & Package Units	N/A		–	–	–	
3090	Other HVAC Sys. & Equipment	N/A		–	–	–	
	D40 Fire Protection						
4010	Sprinklers	Wet pipe sprinkler system, light hazard		S.F. Floor	3.79	3.79	2.7%
4020	Standpipes	N/A		–	–	–	
	D50 Electrical						
5010	Electrical Service/Distribution	800 ampere service, panel board and feeders		S.F. Floor	2.69	2.69	
5020	Lighting & Branch Wiring	Incandescent fixtures, receptacles, switches, A.C. and misc. power		S.F. Floor	7.83	7.83	9.0%
5030	Communications & Security	Addressable alarm systems, emergency lighting, internet and phone wiring		S.F. Floor	1.87	1.87	
5090	Other Electrical Systems	N/A		–	–	–	
E. EQUIPMENT & FURNISHINGS							
1010	Commercial Equipment	N/A		–	–	–	
1020	Institutional Equipment	N/A		–	–	–	1.2 %
1030	Vehicular Equipment	N/A		–	–	–	
1090	Other Equipment	Residential freestanding gas ranges, dishwashers		S.F. Floor	1.65	1.65	
F. SPECIAL CONSTRUCTION							
1020	Integrated Construction	N/A		–	–	–	0.0 %
1040	Special Facilities	N/A		–	–	–	
G. BUILDING SITEWORK		**N/A**					
				(10) **Sub-Total**		138.26	**100%**
	CONTRACTOR FEES (General Requirements: 10%, Overhead: 5%, Profit: 10%) (11)				25%	34.54	
	ARCHITECT FEES				7%	12.10	
				(12) **Total Building Cost**		**184.90**	

1 Building Description (Model costs are calculated for a 3-story apartment building with a 10' story height and 22,500 square feet of floor area)

The model highlighted is described in terms of building type, number of stories, typical story height, and square footage.

2 Type of Building (Apartment, 1-3 Story)

3 Division C Interiors (C1020 Interior Doors)

System costs are presented in divisions according to the 7-element UNIFORMAT II classifications. Each of the component systems is listed.

4 Specification Highlights (Interior single leaf doors, frames and hardware)

All systems in each subdivision are described with the material and proportions used.

5 Quantity Criteria (130 S.F. Floor/Door)

The criteria used in determining quantities for the calculations are shown.

6 Unit (Each)

The unit of measure shown in this column is the unit of measure of the particular system shown that corresponds to the unit cost.

7 Unit Cost ($1,398)

The cost per unit of measure of each system subdivision.

8 Cost per Square Foot ($10.60)

The cost per square foot for each system is the unit cost of the system times the total number of units, divided by the total square feet of building area.

9 % of Sub-Total (25.9%)

The percent of sub-total is the total cost per square foot of all systems in the division divided by the sub-total cost per square foot of the building.

10 Sub-Total ($138.26)

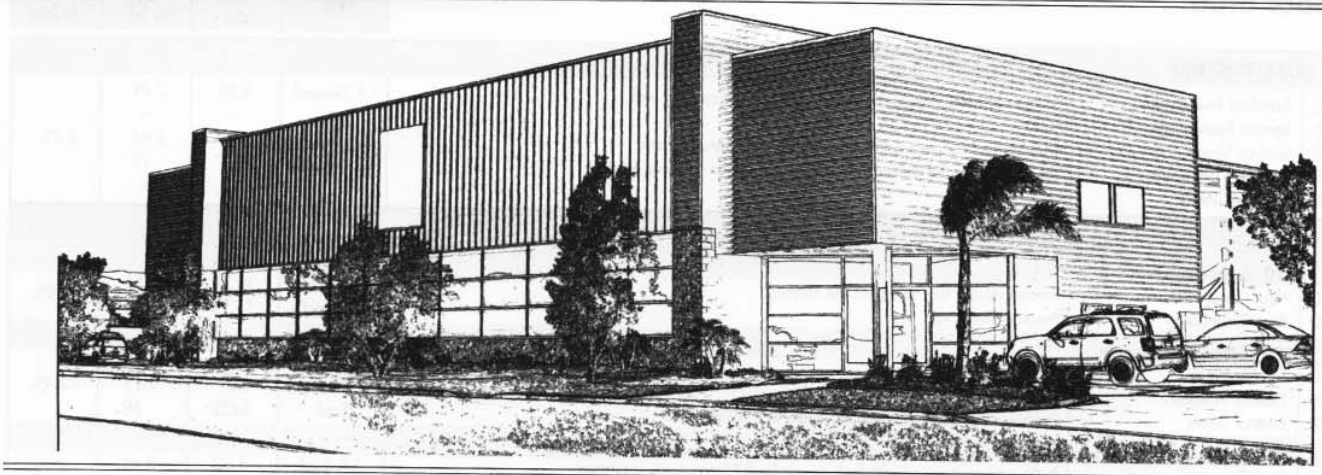
The sub-total is the total of all the system costs per square foot.

11 Project Fees (Contractor Fees) (25%); (Architects' Fee) (7%)

Contractor fees to cover the general requirements, overhead, and profit of the general contractor are added as a percentage of the sub-total. An architect's fee, also as a percentage of the sub-total, is also added. These values may vary significantly with the building type or project.

12 Total Building Cost ($184.90)

The total building cost per square foot of building area is the sum of the square foot costs of all the systems, the general contractor's general requirements, overhead and profit, and the architect's fee. The total building cost is the amount that appears shaded in the Cost per Square Foot of Floor Area table shown previously.



Costs per square foot of floor area

Exterior Wall	S.F. Area	2000	3000	5000	7000	9000	12000	15000	20000	25000
	L.F. Perimeter	220	260	320	360	420	480	520	640	700
Vinyl Clapboard	Wood Frame	223.55	200.55	179.90	169.25	164.70	159.30	155.20	152.70	149.75
Stone Veneer	Wood Frame	259.00	228.60	200.70	186.10	180.05	172.45	166.65	163.35	159.15
Fiber Cement	Rigid Steel	239.95	215.00	192.45	180.80	175.80	169.80	165.25	162.60	159.30
E.I.F.S.	Rigid Steel	242.45	217.00	193.90	181.95	176.90	170.75	166.05	163.35	159.95
Precast Concrete	Reinforced Concrete	311.90	273.55	237.95	219.05	211.40	201.55	193.90	189.70	184.15
Brick Veneer	Reinforced Concrete	322.10	281.70	244.20	224.25	216.20	205.80	197.80	193.35	187.45
Perimeter Adj., Add or Deduct	Per 100 L.F.	29.70	19.95	11.90	8.50	6.65	4.90	3.90	3.00	2.35
Story Hgt. Adj., Add or Deduct	Per 1 Ft.	3.00	2.45	1.70	1.45	1.30	1.10	0.95	0.90	0.80
***For Basement**, add $35.80 per square foot of basement area*										

The above costs were calculated using the basic specifications shown on the facing page. These costs should be adjusted where necessary for design alternatives and owner's requirements.

Common additives

Description	Unit	$ Cost
Closed circuit surveillance, one station		
Camera and monitor	Ea.	1350
For additional camera stations, add	Ea.	610
Directory boards, plastic, glass covered		
30" x 20"	Ea.	645
36" x 48"	Ea.	1625
Aluminum, 24" x 18"	Ea.	630
36" x 24"	Ea.	785
48" x 32"	Ea.	1025
48" x 60"	Ea.	2225
Electronic, wall mounted	S.F.	4625
Free standing	S.F.	4050
Pedestal access floor system w/plastic laminate cover		
Computer room, less than 6000 SF	S.F.	22.50
Greater than 6000 SF	S.F.	22
Office, greater than 6000 S.F.	S.F.	18.15

Description	Unit	$ Cost
Security access systems		
Metal detectors, wand type	Ea.	138
Walk-through portal type, single-zone	Ea.	4000
Multi-zone	Ea.	5300
X-ray equipment		
Desk top, for mail, small packages	Ea.	3950
Conveyer type, including monitor, minimum	Ea.	17,800
Maximum	Ea.	30,800
Explosive detection equipment		
Hand held, battery operated	Ea.	28,100
Walk-through portal type	Ea.	48,500
Uninterruptible power supply, 15 kVA/12.75 kW	kW	1.30

Important: See the Reference Section for Location Factors.

Model costs calculated for a 1 story building with 12′ story height and 7,000 square feet of floor area

Office, 1 Story

				Unit	Unit Cost	Cost Per S.F.	% Of Sub-Total
A. SUBSTRUCTURE							
1010	Standard Foundations	Poured concrete; strip and spread footings; 4′ foundation wall		S.F. Ground	8.55	8.55	
1020	Special Foundations	N/A		–	–	–	
1030	Slab on Grade	4" reinforced concrete		S.F. Slab	5.87	5.87	9.0%
2010	Basement Excavation	Site preparation for slab and trench for foundation wall and footing		S.F. Ground	.33	.33	
2020	Basement Walls	N/A		–	–	–	
B. SHELL							
	B10 Superstructure						
1010	Floor Construction	Cast in place concrete columns		S.F. Floor	2.90	2.90	12.2%
1020	Roof Construction	Concrete beam and slab		S.F. Roof	17.05	17.05	
	B20 Exterior Enclosure						
2010	Exterior Walls	Precast concrete panels, insulated	*80% of wall*	S.F. Wall	61	30.35	
2020	Exterior Windows	Aluminum awning windows	*20% of wall*	Each	745	3.99	23.4%
2030	Exterior Doors	Aluminum and glass single and double doors, hollow metal doors		Each	4683	4.02	
	B30 Roofing						
3010	Roof Coverings	Single ply membrane, stone ballast, rigid insulation		S.F. Roof	8.58	8.58	5.7%
3020	Roof Openings	Smoke hatches		S.F. Roof	.75	.75	
C. INTERIORS							
1010	Partitions	Gypsum board on metal studs	*20 S.F. Floor/L.F. Partition*	S.F. Partition	6.66	3.33	
1020	Interior Doors	70% Single leaf solid wood doors, 30% hollow metal single leaf	*320 S.F. Floor/Door*	Each	1245	3.91	
1030	Fittings	Plastic laminate toilet partitions		S.F. Floor	.40	.40	
2010	Stair Construction	N/A		–	–	–	12.6%
3010	Wall Finishes	90% Paint, 10% ceramic wall tile		S.F. Surface	1.35	1.35	
3020	Floor Finishes	65% Carpet, 10% porcelain tile, 10% quarry tile		S.F. Floor	5.24	5.24	
3030	Ceiling Finishes	Acoustic ceiling tiles on suspended channel grid		S.F. Ceiling	6.44	6.44	
D. SERVICES							
	D10 Conveying						
1010	Elevators & Lifts	N/A		–	–	–	0.0 %
1020	Escalators & Moving Walks	N/A		–	–	–	
	D20 Plumbing						
2010	Plumbing Fixtures	Restroom and service fixtures, supply and drainage	*1 Fixture/700 S.F. Floor*	Each	2282	3.26	
2020	Domestic Water Distribution	Gas fired water heater		S.F. Floor	1.74	1.74	3.6%
2040	Rain Water Drainage	Roof drains		S.F. Roof	.88	.88	
	D30 HVAC						
3010	Energy Supply	N/A		–	–	–	
3020	Heat Generating Systems	Included in D3050		–	–	–	
3030	Cooling Generating Systems	N/A		–	–	–	14.1 %
3050	Terminal & Package Units	Multizone gas heating, electric cooling unit		S.F. Floor	23.10	23.10	
3090	Other HVAC Sys. & Equipment	N/A		–	–	–	
	D40 Fire Protection						
4010	Sprinklers	Wet pipe light hazard sprinkler system		S.F. Floor	3.89	3.89	3.4%
4020	Standpipes	Standpipes		S.F. Floor	1.67	1.67	
	D50 Electrical						
5010	Electrical Service/Distribution	400 ampere service, panel boards and feeders		S.F. Floor	5.02	5.02	
5020	Lighting & Branch Wiring	Fluorescent fixtures, receptacles, switches, A.C. and misc. power		S.F. Floor	13.44	13.44	16.0%
5030	Communications & Security	Telephone systems, internet wiring, and addressable alarm systems		S.F. Floor	7.70	7.70	
5090	Other Electrical Systems	Emergency generator, 7.5 kW		–	–	–	
E. EQUIPMENT & FURNISHINGS							
1010	Commercial Equipment	N/A		–	–	–	
1020	Institutional Equipment	N/A		–	–	–	0.0 %
1030	Vehicular Equipment	N/A		–	–	–	
1090	Other Equipment	N/A		–	–	–	
F. SPECIAL CONSTRUCTION							
1020	Integrated Construction	N/A		–	–	–	0.0 %
1040	Special Facilities	N/A		–	–	–	
G. BUILDING SITEWORK		**N/A**					
					Sub-Total	163.76	**100%**
	CONTRACTOR FEES (General Requirements: 10%, Overhead: 5%, Profit: 10%)				*25%*	40.96	
	ARCHITECT FEES				*7%*	14.33	
					Total Building Cost	**219.05**	